Center for Genetic Improvement of Livestock

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The center has identified genetic markers associated with desirable and undesirable traits in sheep, and markets a testing service to screen animals.

Background

The center was established in 1991 to identify genetic markers for economically important traits of livestock. The first trait for which genetic markers were identified, was for callipyge gene in sheep, responsible for heavy muscling. Sheep carrying the callipyge gene have 8% more muscle, 8% less fat and 2% less bone, when compared to sheep that do not express the gene. The center has recently identified a genetic marker for a second trait in sheep called Spider Lamb Syndrome (SLS), which results in severe bone deformities of the legs and back in animals with two copies of the mutation. Animals that have one copy of the mutation look normal but can produce spider off-spring.

Technology Development Progress

The center has determined that the callipyge gene provides an **additional $16.06 (10.3%)** to the value of each marketed sheep. If just 25% of the sheep in Utah carried the callipyge gene, the potential added value impact to Utah would be $1.4 million. The center has control of the genetic testing procedure necessary for identification of animals carrying the callipyge gene and Spider Lamb Syndrome. The center has developed a test that is 97% accurate in identifying the callipyge gene and a test that is 100% accurate in identifying carriers of the SLS defect. No other laboratory in the world has the available information and, therefore cannot duplicate these tests.

Highlights and Accomplishments

The center provides a genetic screening service for breeding programs. To date over 600 animals have been evaluated for the presence of callipyge gene from commercial flocks in the U.S., resulting in revenues to the center. Over 1400 tests have been performed for SLS resulting in revenues of over $35,000 to date. A patent application has been filed on the SLS test.

A new company, has been formed to perform the genetic testing, **Livestock Molecular Research and Development Inc.,** with laboratories in Logan, Utah, and Monticello, Illinois.

The first and third sheep, from left, have developed big butts because of a mutant gene inherited only from the male, researchers at USU have discovered.

Summary Data:

Current

1996-97 Award	$40,000
Matching Funds	$132,000
Patents Pending	1
Patents Issued	0
License Agreements	1
Spin-off Companies	1
Companies Assisted	8
Industry Jobs	2
Center Jobs	5

Cumulative

Awards	$336,500
Matching Funds	$698,985
Patents Issued	0
License Agreements	1
Spin-off Companies	1